Available online at www.sciencedirect.com
ScienceDirect
Journal of Forensic and Legal Medicine 14 (2007) 46–48
JOURNAL OF FORENSIC AND LEGAL MEDICINE
www.elsevier.com/jflm

Case review

Blood from a line – Is it admissible?

Guy Beaumont MRCP, DMJ (General Practioner/Forensic Physician) *

99 George Street, Dumfries, Dumfries and Galloway DG1 1DS, United Kingdom

Received 12 November 2005; received in revised form 9 December 2005; accepted 11 December 2005
Available online 13 October 2006

Abstract

The Police Reform Act 2002 enables blood to be lawfully taken from any driver who has been involved in a road traffic accident, who lacks the capacity to consent as a result of a medical problem or injury, and who may be under the influence of alcohol or drugs. Consent at the time is not required but must be obtained at a later date. Experience of forensic physicians suggest obtaining blood directly from a vein, as the Act requires, can sometimes be technically difficult in an intensive care setting.

The case described discusses one such scenario and puts forward the reasons as to why blood from a line should be accepted as evidence.
© 2005 Elsevier Ltd and AFP. All rights reserved.

Keywords: Police Reform Act; Blood alcohol; Blood from a line; Capacity

1. Introduction

The Police Reform Act was introduced to England, Wales and Scotland in October 2002.[1,2] It enables blood to be lawfully taken from any driver involved in a road traffic offence who is unable to give consent, due to lack of capacity as a result of injuries or other medical reason. This blood can then be stored and tested at a later date for alcohol and/or drugs once capacity is regained and consent can be given. It was introduced since there was a general feeling that some drivers were escaping conviction for drink driving offences as a result of their being too ill or injured for valid consent to be obtained. More often than not, a driver that has been involved in a road traffic accident and who lacks capacity, is usually unconscious through severe injury and requires medical support in an intensive care setting. These patients often require artificial ventilation and have venous and arterial lines in situ. This can pose a problem for the sampling forensic physician (FP) who is required to take a venous sample from the subject but not from an existing line as stated in the Act. The following case highlights this not so uncommon scenario with which forensic physicians (FP's) may well be faced and discussion is then given to the appropriateness of taking samples from an existing line with reference to the Act.

2. Case details

I was called to attend the local intensive care unit in June 2003 at 0300 h to take a blood alcohol level from an unconscious driver who had been involved in a road traffic accident. This was the first time the Police Reform Act 2002 had been used in our region for this purpose. The subject was a 23 year old male who had crashed his car with no other party involved. He had a head injury and required ventilation. The duty inspector in charge felt that capacity and the ability to give consent for blood alcohol sampling had been lost for medical reasons. The consultant anaesthetist in charge agreed a sample could be taken and that it would not be detrimental to the patient's overall care. The subject had intravenous drips in both arms (antecubital fossae) and hands and an arterial line in the left wrist. I was invited by the consultant to take a sample from the arterial line as this was the usual access point for sampling. At this point, vague recollections of the Act in relation to samples from lines passed through

* Tel.: +44 1387 253333.
E-mail address: guybeaum@aol.com.

1752-928X/$ - see front matter © 2005 Elsevier Ltd and AFP. All rights reserved.
doi:10.1016/j.jcfm.2005.12.003

my mind but nothing of significance could be remembered. The officer in charge did not have any concerns about this either. So in traditional ''house officer'' fashion, I placidly accepted the consultant's invitation and took blood from the arterial line. The first 5 ml of blood from the arterial line was discarded and then a further 10 ml was taken and split into two samples in the usual fashion. This was then stored until the subject regained consciousness and subsequently gave consent for blood alcohol analysis.

Unfortunately, due to technical reasons (small clots in the sample), analysis was not possible.

3. The Police Reform Act 2002

To fulfill both legal and ethical requirements when considering taking a specimen of blood under this Act, any FP must make sure that:

1. the police officer in charge has assessed the subject's capacity and found him to be incapable of giving valid consent due to a medical reason,
2. the FP taking the sample also is satisfied that valid consent cannot be given,
3. there is no resistance or objection from the subject, and
4. the doctor in charge of the patient's care does not feel that taking a sample will interfere with this care.

It is not the role of the treating doctor nor FP to determine capacity, but is legally the police officer's duty to determine this. The FP however, must be satisfied in his or her mind that capacity has been lost, since if not and any resistance is met, then ethically taking a sample would not be justified even though in principal the doctor would be protected by the Act. If doubt exists in the doctors mind then it would be ethically justified not to take the sample, bearing in mind however, a subject cannot be prosecuted if the doctor declines to take a sample.

4. Discussion

At a meeting of the Royal Society of Medicine in January 2004,[3] this particular dilemma was discussed. About two-thirds of FP's present had taken 1–2 samples under the new act. The majority of those had faced a similar scenario as described and some like myself had also taken an arterial sample from an existing line since it was felt something was better than nothing. However, no one knew of any case having gone to court and so no precedent had been set. Correspondence on the Association of Forensic Physicians website message board also confirms that other FP'S have faced a similar problem.

There are several potential problems that may make a sample from a line ''unreliable'' in a court of law. Ideally, the sample should be taken from a limb that has no intravenous drip running into it. If a drip is running, then consideration needs to be given to the contents of the drip, its effects on the subsequent results and the length of time it should be stopped before sampling. Traditionally, drips are stopped for a short period (5 min) but there appears to be no formal time period suggested. Theoretically, a running drip would likely dilute any venous alcohol level. Arterial samples from lines have been reliably used for years by clinicians to check biochemical and haematological markers to monitor the progress of seriously ill patients. The first 5 ml of blood is always discarded – the actual dead space as measured between the tip of the line and the three way tap is only 0.8 ml,[4] and so effectively fresh arterial blood is being sampled. If a blood alcohol level was needed to be taken to facilitate the medical care of the patient, then blood would be taken from the arterial line.

So how can a sample from an existing line give an unreliable result? Bacterial colonisation of the line resulting in fermentation could possibly do this. However, if this were the case then one would expect to see some clinical signs of infection evident. This view has been tested in court and is supported by case law.[5] Even so, once the dead space had been discarded, the containers in which the sample is injected is lined with fluoride which inhibits any bacterial growth. Contamination from other drips would potentially affect venous results but not arterial.

Another possible argument is that the sample is of arterial and not venous blood. Arterial blood during the absorption phase of alcohol (30–60 min) will theoretically have a higher alcohol level than venous blood, felt to be due to the rapid diffusion of alcohol into the body tissues from venous blood during the early phases of absorption. However, following this phase, at equilibrium when the body fluids and tissues have absorbed a proportionate quantity of alcohol, the blood alcohol concentration (BAC) of arterial blood is equal to the BAC of venous blood, and if anything may be slightly less.[6] The majority of samples taken will be well after the absorption phase.

5. Conclusion

Following contact with the BMA ethics committee involved with this Act,[7] two main reasons were cited as to why samples from a line may not be admissible. Firstly, it contravened the Act and secondly the possibility of ''contamination'' was stated, although it was acknowledged that perhaps the finer details of the Act may need revisiting. Whatever the reasons that may be put forward, if the Act remains the same then I believe there will be many situations, where venous samples are medically unavailable and reliable samples from lines will be deemed inadmissible. Until this is challenged in a court of law, unconscious drink drivers may well yet still escape conviction as a result.

References

1. Police Reform Act 2002.
2. Guidance for doctors on the provision of the Police Reform Act 2002 from the British Medical Association and Association of Police Surgeons. BMA Council October 2002.

3. Body of evidence, Royal Society of Medicine Lecture, London, January 2004.
4. Perkins V. Personal communication. Consultant anaesthetist ITU, Dumfries Royal Infirmary.
5. Sophocleous V. Ringer 1988 RTR 52.
6. Jones AW, Norberg A, Hahn RG. Concentration-time profiles of ethanol in arterial and venous blood and end-expired breath during and after intravenous infusion. *J Forensic Sci* 1997;**6**:1088–94.
7. Sheather J. British Medical Association, Ethics Department, June 2004. Available from: ethics@bma.org.uk.